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(54) **Propylene polymer compositions containing high melt strength propylene polymer material**
Propylenpolymermischung enthaltend ein Propylenpolymer hoher Schmelzfestigkeit
Composition de polymères de propylène avec des polymères de propylène à haute résistance à l'état fondu

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DE-A- 3 415 063 **US-A- 4 578 430**
US-A- 4 916 198

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Description

This invention relates to a polyolefin composition, and more specifically, to a propylene polymer composition having incorporated therein a high melt strength propylene polymer material.

5 Polypropylene resins have been widely used in various fields, such as fibers, films and other shaped articles, because of their excellent physical and mechanical properties. However, polypropylene has high crystallinity and poor affinity for dye or pigments.

Attempts have been made to improve the dye receptivity of polypropylene resin. For example, U.S. 3,415,904 discloses incorporating into polypropylene an ethylene/acrylic ester copolymer which has been treated with an amine. U.S. 4,872,880 discloses treating a polyolefin article with an aqueous dye bath, wherein the polyolefin is a blend of a polyolefin and a copolymer selected from (a) a zinc ionomer of a copolymer of an alpha-olefin and (b) a graft copolymer of at least one alpha, beta-unsaturated carboxylic acid or unsaturated carboxylic acid anhydride grafted onto a polyolefin backbone.

15 It is known and discussed in the paper of Y. Lin, et. al., entitled, "The Effect of Pigments on the Development of Structure and Properties of Polypropylene Filaments", ANTEC '91, page 1950-1953, that many compounds act as nucleating agents for the crystallization of polypropylene and different pigments nucleate crystallization in polypropylene during the fiber forming process, blue pigments being highly active as a nucleating agent and white pigments being substantially less active.

Thus, in view of the varying degree of nucleating activity of different pigments, when processing fibers/yarns of propylene polymer resins having color, adjustments typically must be made in processing conditions, spinning speeds and draw ratios, in order to produce colored fibers/yarns with consistent and desirable properties depending upon the particular color used. These changes in processing conditions generally result in lost production time as well as production of yarns that do not meet target specifications.

Accordingly, there is provided a propylene polymer composition consisting essentially of (A) a propylene polymer resin having a melt flow rate of 5 to 50 dg/min selected from the group consisting of (i) a propylene homopolymer having an isotactic index greater than 80, and (ii) a random copolymer of propylene and olefin selected from ethylene or C₄₋₁₀ alpha-olefins, provided that when the olefin is ethylene the maximum polymerized ethylene content is 10%, and when the olefin is a C₄₋₁₀ alpha-olefin, the maximum polymerized content thereof is 20%, and (B) from 0.05 to 0.2 parts, and preferably from 0.05 to 0.126%, of a normally solid, gel-free, propylene polymer material having a weight average molecular weight of at least 100,000, having a branching index of from 0.2 to less than 0.9 and significant strain hardening elongational viscosity, optionally predispersed in a propylene polymer resin that is the same or different from (A), and obtained from an irradiated or peroxide-treated normally solid linear propylene polymer material, having a weight average molecular weight of at least 100,000.

A composition is obtained which allows propylene polymer resins over a wide range of colors to be spun at the same process conditions to produce fiber/yarn with consistent and desirable properties, such as elongation, shrinkage and tenacity.

All parts and percentages used in this application are by weight unless otherwise specified. Ambient or room temperature is approximately 25°C.

The propylene polymer resin, component (A), used in the composition of the present invention can be (i) a propylene homopolymer having an isotactic index greater than 80, preferably from 85 to 98, or (ii) a random copolymer of propylene and an olefin selected from ethylene or C₄₋₁₀ alpha-olefins, provided that when the olefin is ethylene, the maximum polymerized ethylene content is 10%, preferably 4-9%, and when the olefin is a C₄₋₁₀ alpha-olefin, the maximum polymerized content thereof is 20%, preferably 16%.

Preferably, the propylene polymer resin, component (A), is a propylene homopolymer.

45 Component (B) of the present invention is a normally solid, gel-free, propylene polymer material having a weight average molecular weight of at least 100,000 which has a branching index of from 0.2 to less than 0.9, preferably from 0.2 to 0.6, and significant strain hardening elongational viscosity.

Said propylene polymer material is selected from the group consisting of (i) a homopolymer of propylene, (ii) a random copolymer of propylene and an olefin selected from the group consisting of ethylene and C₄₋₁₀ alpha-olefins, provided that, when said olefin is ethylene, the maximum polymerized ethylene content is 5%, preferably 4%, and when said olefin is a C₄₋₁₀ alpha-olefin, the maximum polymerized alpha-olefin content is 20%, preferably 16%, and (iii) a random terpolymer of propylene and alpha-olefins selected from the group consisting of ethylene and C₄₋₈ alpha-olefins, provided that the maximum polymerized C₄₋₈ alpha-olefin content is 20%, preferably 16%, and when ethylene is one of said alpha-olefins, the maximum polymerized ethylene content is 5%, and preferably 4%.

55 Preferably, the propylene polymer material is a propylene homopolymer.

Said C₄₋₁₀ alpha-olefins include linear or branched C₄₋₁₀ alpha-olefins, such as 1-butene, isobutylene, 1-pentene, 3-methyl-1-butene, 1-hexene, 3,4-dimethyl-1-butene, 1-heptene, 3-methyl-1-hexene.

As used herein "high molecular weight" means weight average molecular weight of at least 100,000. "Branching

index* is the degree of long chain branching as defined in U.S. 4,916,198, 5,047,446 and 5,047,485.

Said propylene polymer material can be prepared by irradiating or peroxide treating a normally solid, high molecular weight, linear, propylene polymer material in any physical form, for example, spherical, finely divided powder particles, granules, flakes and pellets. The radiation method is typically carried out according to the method described in U.S. 4,916,198 and U.S. 5,047,446. The peroxide treatment is generally carried out according to the method described in 5,047,485.

The propylene polymer material used in the composition of the present invention can be blended with component (A) in a neat form, or in the form of a "concentrate", wherein the propylene polymer material is first dispersed in a propylene polymer resin that is the same as or different from component (A) before blending with component (A).

In addition to the propylene polymer resin and propylene polymer material, the composition may also contain conventional additives, such as pigments, antioxidants, UV stabilizers and antacids.

The composition of the present invention can be prepared according to conventional methods, for example, mixing the propylene polymer resin, the propylene polymer material, or a concentrate thereof, and well known additives in a blender, such as a Henschel or Banbury mixer, to uniformly disperse the ingredients, at a temperature equal to or exceeding the polymer softening temperature, then extruding the mixture and pelletizing.

The propylene polymer resin can be "visbroken" to have a melt flow rate (MFR, according to ASTM D-1238, measured at 230°, 2.16 kg) of from 5 to 50, preferably from 10 to 50, more preferably from 25 to 45, having an original MFR of from 0.4 to 10. Alternatively, the propylene polymer resin can be produced directly in the polymerization reactor to the preferred MFR. If desired, visbreaking can be carried out in the presence or absence of crystalline polypropylene.

The process of visbreaking a propylene polymer resin is well known to those ordinarily skilled in the art. Generally, it is carried out as follows: polypropylene in "as polymerized" form, e.g., powder or flake from the reaction without any further processing, has sprayed thereon or blended therewith, a prodegradant or free radical generating source, e.g. a peroxide in liquid or powder form or a polymer/peroxide concentrate, (Xantrix 3024 polypropylene/peroxide concentrate available from HIMONT U.S.A., Inc.). The propylene polymer/peroxide mixture is then introduced into a means for thermally plasticizing and conveying the mixture. Residence time and temperature are controlled in relation to the particular peroxide selected (i.e., based on the half-life of the peroxide at the process temperature of the extruder) so as to effect the desired degree of polymer chain degradation. The net result is to narrow the molecular weight distribution of the propylene polymer modified, as well as to reduce the overall molecular weight and thereby increase the MFR relative to the as-polymerized polymer. For example, a polymer with a fractional MFR (i.e. less than 1), or a polymer with a MFR of 0.4-10, can be selectively visbroken to a MFR of 5-50, preferably 25-45, e.g., about 35, by selection of the peroxide type, extruder temperature and extruder residence time all of which is well known to those of ordinary skill in the art of visbreaking polymer with peroxides.

In general, the prodegradant should not interfere with or be adversely affected by commonly used polypropylene stabilizers and should effectively produce free radicals that upon decomposition initiate degradation of the polypropylene moiety. The prodegradant should have a short enough half-life at a polymer manufacturing extrusion temperature, however, so as to be completely or substantially completely reacted before exiting the extruder. Preferably, they have a half-life in the propylene of less than 9 seconds at 288°C (550°F) so that at least 99% of the prodegradant reacts in the molten polymer before 1 minute of extruder residence time. Such prodegradants include, by way of example, the following: 2,5-dimethyl-2,5-bis(t-butylperoxy)hexyne-3 and 4-methyl-4-t-butyl-peroxy-2-pentanone (e.g. Lupersol 130 and Lupersol 120 peroxides available from Lucidol Division, Penwalt Corporation); 3,6,6,9,9-pentamethyl-3-ethyl acetate-1,2,4,5-tetraoxacyclononane (e.g. USO-138 products from Witco Chemical Corporation); 2,5-dimethyl-2,5-bis-(t-butylperoxy)-hexane (e.g. Lupersol 101 peroxide); and alpha, alpha'-bis-(tert-butylperoxy)diisopropylbenzene (e.g., Vulcup R peroxide from Hercules Inc.). Preferred concentration of the free radical source prodegradants are in the range of from 0.01 to 0.4%, based on the weight of the polymer(s). Particularly preferred is Lupersol 101 peroxide, wherein the peroxide is sprayed onto or mixed with the propylene polymer at a concentration of about 0.1 weight % prior to their being fed to an extruder at about 230°C, for a residence time of 2 to 3 minutes. Extrusion processes relating to the treatment of propylene-containing polymer in the presence of an organic peroxide to increase melt flow rate and reduce viscosity are known in the art and are described, e.g. in U.S. 3,862,265, U.S. 4,451,589 and U.S. 4,578,430.

Various articles can be prepared from the fibers, filaments, or yarns produced from the compositions of the present invention, such as fabrics or non-woven webs, by spinning processes, as well as by spun-bonded or melt-blown processes.

The present invention will be illustrated in greater detail with reference to the examples of the invention set forth below.

All yarns used in the examples below are 300 denier, 4.2 denier per filament.

The ingredients used in the preparation of the compositions of this invention illustrated in the examples that follow are:

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Polymer A - a propylene homopolymer having a MFR of 34 dg/min., prepared by visbreaking with Lupersol 101 peroxide a propylene homopolymer having an initial MFR of 1.5 dg/min.

Polymer B - a propylene homopolymer having a MFR of 34 dg/min., prepared by visbreaking with Lupersol 101 peroxide a propylene homopolymer having an initial MFR of 0.4 dg/min.

Polymer C - a propylene homopolymer having an as-polymerized MFR of 30 dg/min.

Polymer D - a high melt strength propylene homopolymer having a MFR of 4.6 dg/min., and branching index of 0.6 ± 0.2 .

Stabilizer 1 - Irgafos 168 tris(2,4-di-tert-butylphenyl) phosphite stabilizer.

Stabilizer 2 - Tinuvin 622DL dimethyl succinate polymer with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidine ethanol stabilizer.

Stabilizer 3 - Chimassorb 944FL N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexanediamine polymer with 2,4,6-trichloro-1,3,5-triazine and 2,4,4-trimethyl-1,2-pentanamine stabilizer.

Examples 1 and 2

A propylene polymer composition of the present invention is prepared by mixing a propylene polymer resin, a high melt strength propylene polymer material, the stabilizers, calcium stearate and pigment concentrate, until the ingredients are uniformly dispersed, at a temperature equal or exceeding the polymers' softening temperature, then the mixture is extruded and pelletized. The pigment concentrate is (a) a concentrate of 50% TiO_2 in a dispersion medium of which is approximately 45-48% of a propylene homopolymer having a 12 MFR (herein referred to as "white") predispersed in polymer B at letdown ratio of 10:1, said concentrate is incorporated into the propylene polymer composition at a letdown ratio of 12:1 (propylene polymer composition to pigment concentrate) to obtain a level of 0.35 wt% TiO_2 , based on the total propylene polymer composition or (b) a concentrate of 27% navy blue in a dispersion medium of which approximately 70% is a propylene homopolymer having a 12 MFR (herein referred to as "blue") predispersed in polymer B at letdown ratio of 3.5:1, said concentrate is incorporated into the propylene polymer composition at a letdown ratio of 8.5:1, to obtain a level of 0.71 wt% navy blue, based on the total propylene polymer composition.

Yarns were prepared from fibers of the compositions of each example illustrated in Table 1, which were prepared according to the method described above.

The draw ratio, spinning speed and physical properties are set forth in Table 1.

Controls 1 and 2

Yarns were prepared from fibers of the compositions of each example illustrated in Table 1, except that the compositions did not contain high melt strength propylene polymer material.

The draw ratio, spinning speed, and physical properties are set forth in Table 1.

Table 1

Ingredients	Ex.1	C-1	Ex.2	C-2
Polymer A, %	91.92	--	89.31	--
Polymer B, %	6.98	99.04	7.68	97.13
Polymer D, %	0.14	--	0.14	--
Stabilizer 2, %	0.09	0.09	0.09	0.09
Stabilizer 3, %	0.04	0.04	0.04	0.04
Stabilizer 1, %	0.10	0.10	0.10	0.10
Calcium Stearate	0.03	0.03	0.03	0.03
Pigment	white, %	0.35	--	--
	blue, %	--	0.71	0.71
Dispersion Medium	0.35	0.35	1.90	1.90
Draw Ratio	3.4x	2.6x	3.4x	3.4x
Spinning Speed, m./min.	735	962	735	735
Spin/Draw Speed, m./min.	2500	2500	2500	2500

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Table 1 (continued)

Ingredients	Ex.1	C-1	Ex.2	C-2
Properties				
Elongation @ Break, %	51	49	52	41
Spinning Performance	Good	Good	Good	Good

It can be seen from the data in Table 1, that comparable or better elongation can be obtained at a higher draw ratio and lower spinning speed with white colored yarns of fibers prepared from the composition of Example 1 of the present invention, as compared to the elongation of the white yarns of Control 1 drawn and spun at processing conditions typically used for white colored yarns of polypropylene, lower draw ratio and higher spinning speed. In Example 2 of the present invention improved elongation is achieved in blue colored yarns as compared to the blue colored yarns of Control 2 under the same processing conditions.

Examples 3-5

A concentrate of 100 parts of polymer C, 11.10 parts of polymer D, 0.03 parts calcium stearate, 0.10 parts Stabilizer 1, 0.85 parts Stabilizer 2 and 0.85 parts Stabilizer 3 is prepared according to the procedure described above.

Polymer B is blended with said concentrate, varying the ratio of polymer B:concentrate. The same white pigment concentrate used in Example 1 is added at 12:1 letdown ratio.

Yarns were prepared from the fibers of the blend prepared above containing polymer B, the concentrate and a white color concentrate is added to the compositions at a letdown ratio of propylene polymer composition to pigment concentrate of 12:1. The draw ratio, spinning speed and physical properties are set forth in Table 2.

Controls 3 and 4

Yarns were prepared from fibers of the compositions of Examples 3-5, and same spin/draw speed, except that the amount of polymer D in the total composition was 0.3% and 0.5%, which is outside the scope of this invention. The draw ratio, spinning speed and physical properties are set forth in Table 2.

Table 2

Ingredients	Ex.3	Ex.4	Ex.5	C-1	C-3	C-4
Polymer B: Concentrate	99:1	99:1	50:1	100:0	33:1	20:1
Polymer D, %	0.1	0.1	0.2	0	0.3	0.5
Draw Ratio	3.0x	3.4x	3.4x	2.6x	3.4x	3.0x
Spinning Speed, m./min	833	735	735	962	735	833
Properties						
Elongation @ Break	64	54	58	49	--	--
Spinning Performance	Good	Good	Good	Good	Brks	Brks

As demonstrated in Table 2, the white yarns prepared from the compositions of the present invention Examples 3-5 have improved elongation and can be spun at a reduced spinning speed and increased draw ratio as compared to the white yarns of Control 1, which did not contain polymer D and Controls 3 and 4 which contained amounts of polymer D outside the scope of this invention.

Examples 6-9

A concentrate of 100 parts of polymer C, 1.56 parts of polymer D, 0.03 parts calcium stearate, 0.10 parts Stabilizer 1, 0.78 parts Stabilizer 2 and 0.78 parts Stabilizer 3 is prepared according to the procedure described above.

Polymer B is blended with said concentrate, varying the ratio of polymer B:concentrate. The same white pigment concentrate used in Example 1 is added to the compositions at a letdown ratio of propylene polymer composition to pigment concentrate of 12:1.

Yarns are prepared from fibers of the composition described above of the present invention at a spin/draw speed of 2500 m/min. The draw ratio, spinning speed and properties are set forth in Table 3.

Table 3

Ingredients	Ex.6	Ex.7	Ex.8	Ex.9	C-1
Polymer B: Concentrate	25:1	20:1	15:1	12:1	100:0
Polymer D, %	0.065	0.076	0.101	0.126	0
Draw Ratio	3.4x	3.4x	3.4x	3.4x	2.5x
Spinning Speed, m./min	735	735	735	735	1000
Properties					
Elongation @ Break	49	48	52	50	48

It can be seen in Table 3, that the white yarns prepared from the compositions of the present invention Examples 6-9 have similar or improved elongation and can be spun at a reduced spinning speed and increased draw ratio as compared to the white yarns of Control 1, which did not contain polymer D.

Examples 10-14

Yarns were prepared from fibers of the composition of the present invention consisting of a blend of polymer B and the concentrate used in the examples of Table 3, except that blue pigment concentrate of example 2 is used at a 8.5:1 letdown ratio instead of white.

A draw ratio of 3.4x and a spinning speed of 735 m./min. was used for all of the yarns in the examples and control. The physical properties are set forth in Table 4.

Table 4

Ingredients	Ex.10	Ex.11	Ex.12	Ex.13	Ex.14	C-1
Polymer B: Concentrate	30:1	25:1	20:1	15:1	12:1	100:0
Polymer D, %	0.05	0.065	0.076	0.101	0.126	0
Elongation @ Break	48	47	47	47	48	41

It can be seen from the results in Table 4 that the blue yarns prepared by the compositions of Examples 10-14 of the present invention have the same or improved elongation as compared to the blue yarn of Control 1 spun at the same spinning conditions.

Claims

1. A propylene polymer composition consisting essentially of (A) a propylene polymer resin having a melt flow rate of 5 to 50 dg/min selected from the group consisting of (i) a propylene homopolymer having an isotactic index greater than 80, and (ii) a random copolymer of propylene and olefin selected from ethylene or C₄₋₁₀ alpha-olefins provided that, when the olefin is ethylene, the maximum polymerized ethylene content is 10%, and when the olefin is a C₄₋₁₀ alpha-olefin, the maximum polymerized content thereof is 20%, and (B) from 0.05 to 0.2 parts of normally solid, gel-free, propylene polymer material having a weight average molecular weight of at least 100,000, a branching index of from 0.2 to less than 0.9 and significant strain hardening elongational viscosity, and obtained from an irradiated or peroxide-treated normally solid linear propylene polymer material, having a weight average molecular weight of at least 100,000.
2. The composition of claim 1, wherein said propylene polymer material (B) is selected from the group consisting of (i) a homopolymer of propylene, (ii) a random copolymer of propylene and an olefin selected from the group consisting of ethylene and C₄₋₁₀ alpha-olefins, provided that when the olefin is ethylene the maximum polymerized ethylene content is 5%, and when the olefin is a C₄₋₁₀ alpha-olefin the maximum polymerized content thereof is 20%, and (iii) a random terpolymer of propylene and alpha-olefins selected from the group consisting of ethylene and C₄₋₈ alpha-olefins provided that the maximum polymerized C₄₋₈ alpha-olefin content is 20%, and when ethylene is one of said alpha-olefins the maximum polymerized content is 5%.
3. The composition of claim 2, wherein said propylene polymer material (B) is a propylene homopolymer.

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4. The composition of claim 1, wherein said propylene polymer material (B) is present in an amount of from 0.05 to 0.126.
5. The composition of claim 1, wherein said propylene polymer material (B) is predispersed in a propylene polymer resin selected from the group consisting of (i) a propylene homopolymer having an isotactic index greater than 80, preferably from 85 to 98, or (ii) a random copolymer of propylene and an olefin selected from ethylene or C₄₋₁₀ alpha-olefins.
6. The composition of claim 5, wherein said propylene polymer resin (A) is a propylene homopolymer.
7. A fiber prepared from the composition of claims 1 or 5.
8. A yarn prepared from the composition of claims 1 or 5.
9. A web prepared from the fiber or yarn of claims 7 or 8.
10. A fabric prepared from the web of claim 9.

Patentansprüche

1. Propylenpolymerzusammensetzung, im wesentlichen bestehend aus: (A) einem Propylenpolymerharz mit einer Fließfähigkeit von 5 bis 50 dg/Min., ausgewählt aus der Gruppe, die besteht aus (i) einem Propylenhomopolymeren mit einem isotaktischen Index von mehr als 80, und (ii) einem statistischen Copolymeren von Propylen und einem aus Ethylen oder C₄₋ bis C₁₀-alpha-Olefinen ausgewählten Olefin, mit der Maßgabe, daß, wenn das Olefin Ethylen ist, der maximale polymerisierte Ethylengehalt 10%, und wenn das Olefin ein C₄₋ bis C₁₀-alpha-Olefin ist, dessen maximaler polymerisierter Gehalt 20% beträgt, und (B) 0,05 bis 0,2 Teilen eines normalerweise festen, gefahrenen Propylenpolymermaterials mit einem Gewichtsmittel-Molekulargewicht von zumindest 100.000, einem Verzweigungsindex von 0,2 bis weniger als 0,9 und einer signifikanten Viskosität der Kaltverfestigung beim Dehnen, erhalten aus einem bestrahlten oder mit Peroxid behandelten, normalerweise festen, geradkettigen Propylenpolymermaterial, mit einem Gewichtsmittel-Molekulargewicht von zumindest 100.000.
2. Zusammensetzung gemäß Anspruch 1, bei der das Propylenpolymermaterial (B) aus der Gruppe ausgewählt ist, die besteht aus (i) einem Homopolymeren von Propylen, (ii) einem statistischen Copolymer von Propylen und einem aus der Gruppe ausgewählten Olefin, die aus Ethylen und C₄₋ bis C₁₀-alpha-Olefinen besteht, mit der Maßgabe, daß, wenn das Olefin Ethylen ist, der maximale polymerisierte Ethylengehalt 5%, und wenn das Olefin ein C₄₋ bis C₁₀-alpha-Olefin ist, dessen maximaler polymerisierter Gehalt 20% beträgt, und (iii) einem statistischen Terpolymer von Propylen und aus der Gruppe ausgewählten alpha-Olefinen die aus Ethylen und C₄₋ bis C₈-alpha-Olefinen besteht, mit der Maßgabe, daß der maximale Gehalt an polymerisierten C₄₋ bis C₈-alpha-Olefinen 20%, und wenn Ethylen eines der alpha-Olefine ist, dessen maximaler polymerisierter Gehalt 5% beträgt.
3. Zusammensetzung gemäß Anspruch 2, bei der das Propylenpolymermaterial (B) ein Propylenhomopolymer ist.
4. Zusammensetzung gemäß Anspruch 1, bei der das Propylenpolymermaterial (B) in einer Menge von 0,05 bis 0,126 vorliegt.
5. Zusammensetzung gemäß Anspruch 1, bei der das Propylenpolymermaterial (B) in einem Propylenpolymerharz vordispersiert ist, das aus der Gruppe ausgewählt ist, die besteht aus (i) einem Propylenhomopolymeren mit einem isotaktischen Index von mehr als 80, vorzugsweise 85 bis 98, oder (ii) einem statistischen Copolymeren von Propylen und einem aus Ethylen oder C₄₋ bis C₁₀-alpha-Olefinen ausgewählten Olefin.
6. Zusammensetzung gemäß Anspruch 5, bei der das Propylenpolymerharz (A) ein Propylenhomopolymer ist.
7. Faser, hergestellt aus der Zusammensetzung gemäß Anspruch 1 oder 5.
8. Garn, hergestellt aus der Zusammensetzung gemäß Anspruch 1 oder 5.
9. Endlose Bahn, hergestellt aus der Faser oder dem Garn gemäß Anspruch 7 oder 8.

10. Textilstoff, hergestellt aus der endlosen Bahn gemäß Anspruch 9.

Revendications

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1. Composition de polymère de propylène constituée essentiellement par (A) une résine de polymère de propylène possédant une vitesse d'écoulement à l'état fondu de 5 à 50 dg/min, choisie parmi le groupe constitué par (i) un homopolymère de propylène dont l'indice isotactique est supérieur à 80 et par (ii) un copolymère statistique de propylène et d'une alpha-oléfine choisie parmi le groupe comprenant l'éthylène ou des alpha-oléfines en C₄-C₁₀, avec cette condition que, lorsque l'alpha-oléfine est l'éthylène, la teneur maximale en éthylène à l'état polymérisé représente 10% et, lorsque l'alpha-oléfine est une alpha-oléfine en C₄-C₁₀, sa teneur maximale à l'état polymérisé représente 20%, et par (B) une matière de polymère de propylène, à concurrence de 0,05 à 0,2 partie, exempte de gel, normalement solide, possédant un poids moléculaire moyen en poids d'au moins 100.000, un indice de ramification de 0,2 à moins de 0,9 et une viscosité élevée à l'allongement lors du durcissement sous contrainte, et que l'on obtient à partir d'une matière de polymère de propylène linéaire normalement solide ayant subi un traitement par exposition à un rayonnement ou un traitement aux peroxydes, possédant un poids moléculaire moyen en poids d'au moins 100.000.
2. Composition selon la revendication 1, dans laquelle ladite matière de polymère de propylène (B) est choisie parmi le groupe constitué par (i) un homopolymère de propylène, par (ii) un copolymère statistique de propylène et d'une alpha-oléfine choisie parmi le groupe constitué par l'éthylène et des alpha-oléfines en C₄-C₁₀, avec cette condition que, lorsque l'alpha-oléfine est l'éthylène, la teneur maximale en éthylène à l'état polymérisé représente 5% et, lorsque l'alpha-oléfine est une alpha-oléfine en C₄-C₁₀, sa teneur maximale à l'état polymérisé représente 20%, et par (iii) un terpolymère statistique de propylène et d'alpha-oléfine choisie parmi le groupe constitué par l'éthylène et par des alpha-oléfines en C₄-C₈, avec cette condition que la teneur maximale en alpha-oléfine en C₄-C₈ à l'état polymérisé représente 20% et, lorsque l'éthylène est une desdites alpha-oléfines, sa teneur maximale à l'état polymérisé représente 5%.
3. Composition selon la revendication 2, dans laquelle ladite matière de polymère de propylène (B) est un homopolymère de propylène.
4. Composition selon la revendication 1, dans laquelle ladite matière de polymère de propylène (B) est présente en une quantité de 0,05 à 0,126.
5. Composition selon la revendication 1, dans laquelle ladite matière de polymère de propylène (B) est prédispersée dans une résine de polymère de propylène choisie parmi le groupe constitué (i) d'un homopolymère de propylène dont l'indice isotactique est supérieur à 80, de préférence s'élève de 85 à 98 ou (ii) d'un copolymère statistique de propylène et d'une alpha-oléfine choisie parmi le groupe comprenant l'éthylène ou des alpha-oléfines en C₄-C₁₀.
6. Composition selon la revendication 5, dans laquelle ladite résine de polymère de propylène (A) est un homopolymère de propylène.
7. Fibre préparée à partir de la composition selon la revendication 1 ou 5.
8. Fil préparé à partir de la composition selon la revendication 1 ou 5.
9. Tissu préparé à partir de la fibre ou du fil selon la revendication 7 ou 8.
10. Etoffe préparée à partir du tissu selon la revendication 9.